

Quiz 5 MATH 115 Summer 2020 **SHOW ALL WORK to receive credit.**

Problems 1-2. Use a calculator to find the function values, rounding your final answer to four decimal places.

1. 1 pt. $\csc 244^\circ$

2. 1 pt. $\tan(-5\pi/9)$

3. 2 pts. Find this value exactly: $\arcsin [\cos(-19\pi/6)]$. (Finding an "exact value" means that decimal approximations from a calculator are not acceptable as answers.)

Problem 4. 4 pts. Prove the identity. Use algebra and basic trigonometric formulas to transform one side of the equation to look like the other side. Show the whole process, without skipping any steps, and explain what you are doing in each step. Work only one side of the equation. Use specific explanations, and not vague descriptions such as "Simplify."

(4 points = algebraically correct proof, with all steps included, and explanations provided for each step.

2 points = Proof missing steps, but algebraically correct and explanations provided for each step.

0 points = Algebra is not correct and/or explanations are not provided for each step.)

$$\csc\theta = \frac{\cot^2\theta}{\csc\theta+1} + 1$$

5. Given $\cos\alpha = 3/4$, with $3\pi/2 < \alpha < 2\pi$, and $\tan\beta = -2$ with $\pi/2 < \beta < \pi$. Find the exact values for the following (no decimal approximations). Simplify your answers.

A. 2 pts. Find $\cot \alpha$

B. 3 pts. Find $\sin(2\beta)$

C. 3 pts. Find $\cos(\alpha - \beta)$

D. 3 pts. Find $\tan(\alpha/2)$

Problem 6. 3 pts. Solve, finding ALL solutions. Express your answer in radians, with exact values.

Solve $\tan(2x) = \frac{-\sqrt{3}}{3}$

7. 8 pts. For the function $y = -2\sin\left[\frac{1}{4}x + \frac{\pi}{3}\right]$

A. Graph at least one period of the function. Be sure to label the scales on your axes.

B. Find the amplitude, period, and phase shift.

C. Find an ordered pair for a point on the graph of the function, where x is 4π . Find exact values.

D. Find an ordered pair for a point on the graph of the function where y is 0. Find exact values.

Answers:

B. The amplitude is _____ The period is _____ The phase shift is _____

C. The point on the graph is: $(4\pi, \text{_____})$.

D. The point on the graph is: $(\text{_____, } 0)$.